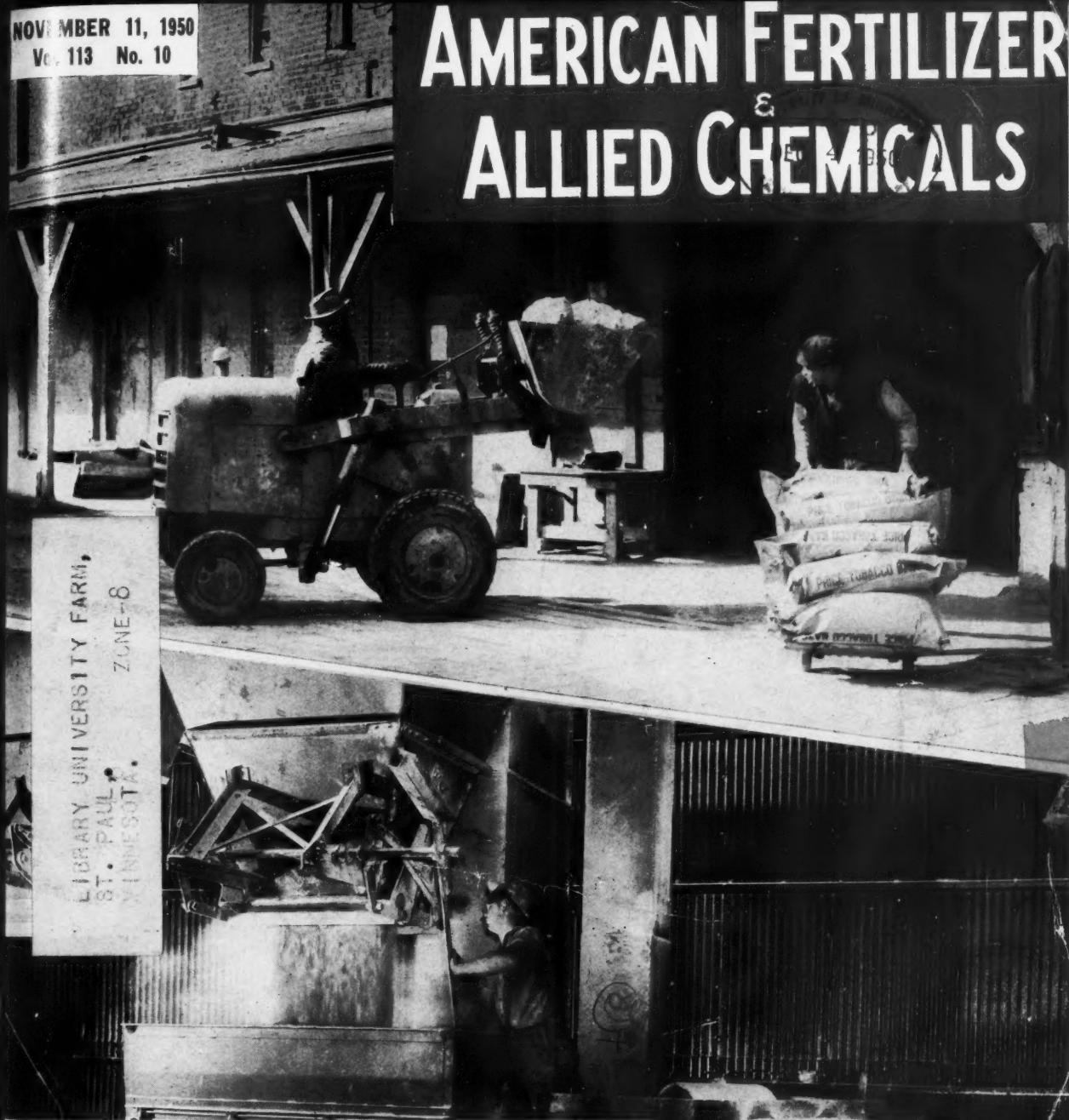


NOVEMBER 11, 1950  
Vol. 113 No. 10

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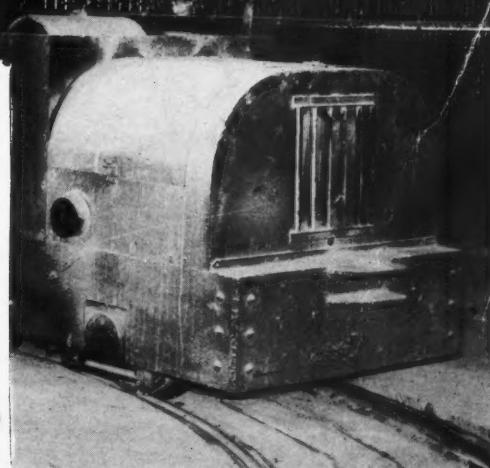
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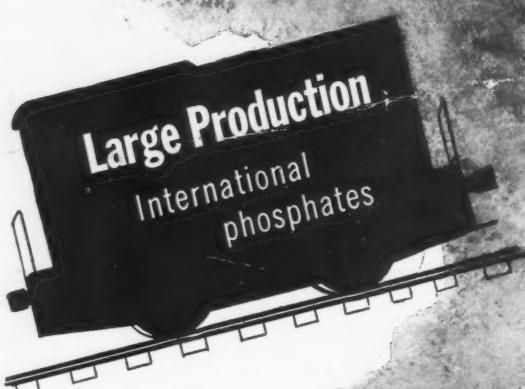
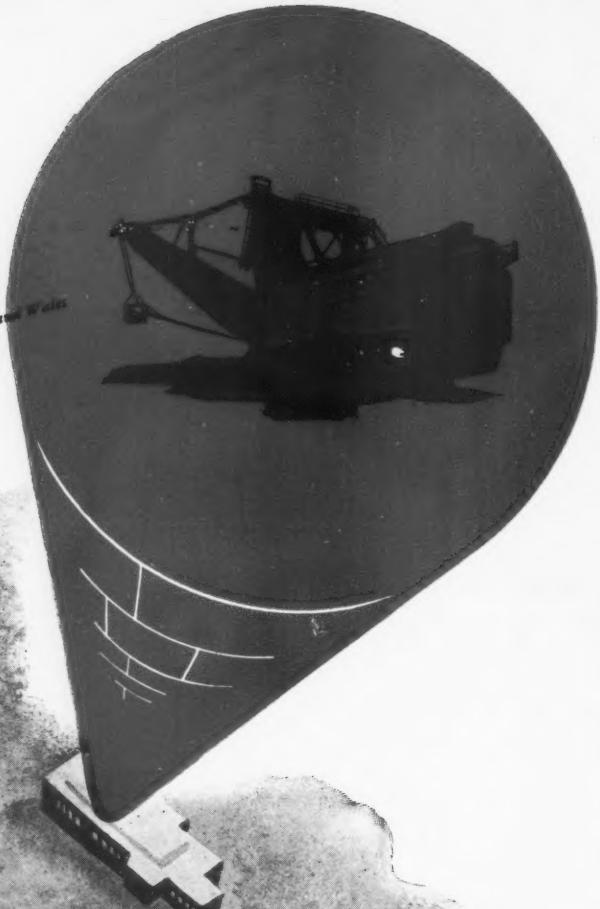
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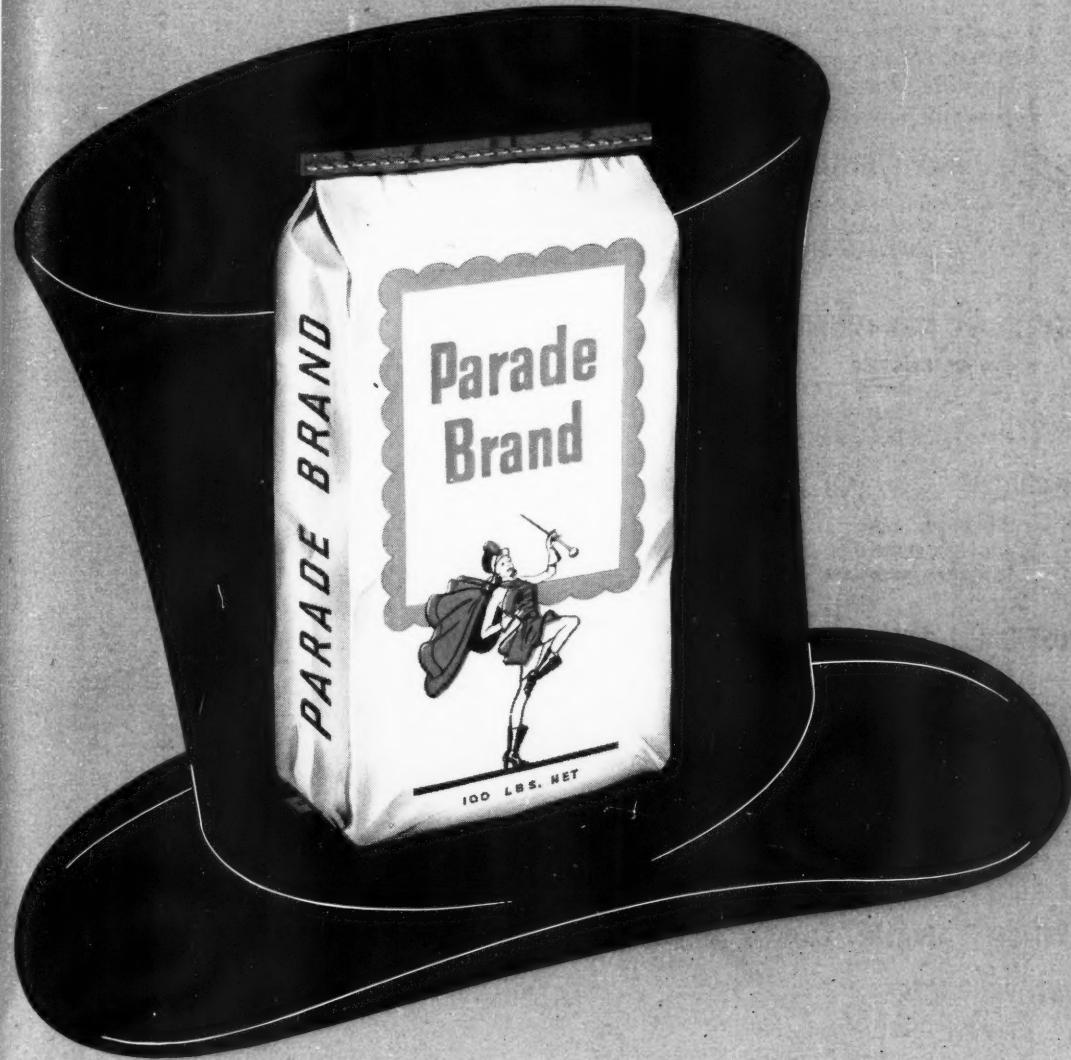
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THE COVER: Moving materials and finished goods in today's fertilizer plant utilizes every type of conveying equipment, from the hand truck to the plant railway.

## No Iron Curtain

The recent arrival of 18 representatives of the French fertilizer nitrogen industry, who will spend six weeks studying American production methods, marks another advance of international cooperation in the war against world hunger and its camp-follower—Communism.

Just one year ago, the British Fertilizer Productivity team started a similar tour, visiting representative fertilizer plants throughout the east coast. The benefits derived from this trip, both by the visitors as well as their American hosts, have been most substantial. The report issued by the British team after their return home is a document that every fertilizer manufacturer on both sides of the Atlantic should study carefully. When we "see ourselves as others see us," we get a lot of new angles.

Within the memory of many a fertilizer executive, the privilege of inspecting a fertilizer plant involved as much red tape and "security check-up" as it takes today for a visit to Oak Ridge or Los Alamos. A mixing plant superintendent operating twelve hand carts, a mixing machine and a platform scale always seemed to cherish the thought that he alone held the secret to perfect production methods. Visitors not welcome.

Today, after two World Wars, industry realizes that an interchange of ideas that will improve production everywhere, benefits every manufacturer by enabling him to lower his costs and thus extend his market. If the fertilizer industry had continued to be as secretive as it was 40 or 50 years ago, today's sales of 15 million tons would not be possible.

For the fertilizer industry throughout the world is faced with something much more serious than local competition. The over-populated sections of the globe—those countries that formerly accepted semi-starvation as the normal way of life—are lifting their voices in protest and demanding better standards of living—or else. New land that can be brought into cultivation is almost non-existent. The only solution to the problem lies in producing bigger and better crops on the land that is now available, and this means more and better and cheaper fertilizers. The soil scientists are doing their part in improving fertilizer usage programs. The industry must not lag behind in attaining maximum production at minimum cost.

Moscow offers the undernourished populations a lot of glittering promises but, in spite of the Iron Curtain, these hungry folks are beginning to realize that even in Russia itself living standards leave much to be desired. When the free peoples of the world can show how enough food can be grown and enough fertilizer produced to grow it, then the collapse of Communism will not be far distant.

# Barrett Celebrates Sixtieth Year as Distributor of Nitrogen

THE Barrett Division, Allied Chemical & Dye Corporation, is celebrating its 60th Anniversary as a producer and distributor of Nitrogen products. The Barrett Division (formerly known as The Barrett Company) first began production of commercial Nitrogen in the form of Anhydrous Ammonia at its plant in Edgewater, N. J., in 1890.

Today in 1950, Barrett is America's leading distributor of nitrogen products and supplies the most complete line of these products: Sulphate of Ammonia, Anhydrous Ammonia, Ammonia Liquor, Barrett Standard Nitrogen Solutions, Barrett Standard Urea Nitrogen Products, "A-N-L" Brand Fertilizer Compound, and "ARCADIAN", the American Nitrate of Soda.

Barrett's 60 years of great progress in the development of Barrett Nitrogen products are important to every American, because Barrett's progress traces the growth of American production of nitrogen.

## *Nitrogen from Coal*

Fifty years ago, old-fashioned coke ovens allowed by-products to escape in smoke and flame. Modern by-product coking plants make coke and also capture valuable gases released during the coking process. These gases are now salvaged to make useful materials, such as tar, pitch, creosote oil, benzol, toluol, xylol, fuel gas . . . and sulphate of ammonia.

Barrett started its sale of coke-oven by-products in 1900, when The National Coal Tar Company and its allied concerns were acquired.

By-products of coke ovens were entirely foreign to the normal busi-

ness of the gas and steel companies using these ovens. Barrett, however, recognized the importance of by-products as basic materials vital to both industry and agriculture.

Investigations indicated that the conversion of by-product ammonia into sulphate of ammonia—which had proved valuable as a fertilizer abroad—would aid both coke-oven operators and farmers. Encouraging coke-oven operators to produce by-product sulphate of ammonia, Barrett started a continuous campaign of research and sales promotion to build a market for this fertilizer material.

Largely through Barrett's efforts, by-product sulphate of ammonia became a well-known and widely used material, the production of which was greatly increased during World War I. By-product sulphate of ammonia was a life-saver to America during that War, but America's production of nitrogen was still far below its needs.

## *Nitrogen from the Air*

To help to make America independent in nitrogen, the first commercial plant to extract nitrogen from the air and convert it into Ammonia was built and put into operation in 1921, at Syracuse, N. Y., by Atmospheric Nitrogen Corporation (a subsidiary of Allied Chemical & Dye Corporation).

Eight years later, in 1929, Atmospheric Nitrogen Corporation constructed at Hopewell, Va., one of the world's largest ammonia plants and production at Syracuse was discontinued. Barrett has marketed the output of these plants, introducing anhydrous ammonia and ammonia liquor for the manufacture of mixed fertilizer in 1927

. . . "Arcadian", the American Nitrate of Soda, in 1929 . . . Barrett Nitrogen Solutions in 1932 . . . and "A-N-L" Brand Fertilizer Compound in 1943.

Today Barrett Nitrogen Solutions are the leading source of nitrogen in mixed fertilizers. Although these solutions were introduced to the fertilizer industry in 1932, Barrett's pioneering in their development started three years earlier in 1929. During the last 21 years, Barrett's continuing research has constantly worked to improve both the quality of solutions and the technology of their use in formulating better fertilizers.

Developed to serve the peacetime needs of agriculture and industry, the production of nitrogen at Hopewell was vital to America during World War II. Nitrogen, the growth element in fertilizers, is also the basic ingredient of military explosives. During the first year of the War, while government nitrogen plants were being constructed, the Hopewell plant was America's chief source of nitrogen. Barrett Nitrogen fought on every front.

During World War II—utilizing methods perfected at Syracuse and Hopewell—Atmospheric Nitrogen Corporation constructed and operated two government-owned synthetic Ammonia plants, one at South Point, Ohio, and the other at West Henderson, Ky. At the cessation of hostilities, the Solvay Process Division, Allied Chemical & Dye Corporation, leased the South Point plant and later purchased it. Today this plant is an added producer of Barrett Nitrogen products for the fertilizer and chemical industries.

(Continued on page 34)

## French Delegation To Inspect U.S. Nitrogen Plants

On November 6th, eighteen representatives of the French nitrogen fertilizer industry began a six-week study of American high-productivity methods in this field.

The mission of the study group is to take back to France advance technical knowledge which will enable French plants to produce more nitrogen at reduced costs.

Greater efficiency in nitrogen production would lessen France's need for importing this commodity, which last year took \$1,763,000 of France's Marshall Plan aid and an even greater amount in France's own foreign exchange.

The nitrogen requirements of French agriculture for 1952 have been placed at 450,000 tons. The industry has made substantial production gains in the last five years, increasing output from 88,000 tons in 1945-1946 to double that amount two years later and 235,000 tons—a 300 per cent gain—in 1949-1950. Future increases will require the adoption of improved production techniques with greater efficiency and lowered costs.

The French study group which arrived in New York on November 3rd, will visit approximately 11 plants representative of the nitrogen fertilizer and coke by-products industry. These plants are located in Florence, Ala.; Chattanooga, Tenn.; Houston, Texas; El Dorado, Ark.; Pittsburgh, Pa.; Baltimore, Md.; and Kearney, N. J.

The first week of their tour will be spent in Washington, D. C., consulting with Economic Cooperation Administration, Department of Agriculture, Department of Labor and other government officials, and representatives of industry associations and labor unions. These include the American Plant Food Council, National Fertilizer Association, American Coke and Coal Chemicals Institute, National Planning Association, and the United Gas, Coke and Chemical Workers of America (CIO).

Inspection trips will take them also to the Department of Agricul-

## Davison Chemical Elects New Directors



R. L. Hockley

Thomas B. Butler

W. N. Watmough, Jr.

Two new members of the Board of Directors of The Davison Chemical Corporation, both Baltimore men, were elected on October 31st at the annual meeting of Davison stockholders. This action followed the adoption of an amendment by stockholders increasing the Board from nine to eleven members.

One of the new directors is Thomas B. Butler, president of the Safe Deposit & Trust Company, and the director of several corporations, including the Atlantic Coast Line Railroad Company, the Louisville and Nashville Railroad Company, and the A. E. Staley Manufacturing Company.

The other new director is R. L. Hockley, a vice-president of Davison since May, 1942, and in charge

of the company's marketing activities since that date. Mr. Hockley's close association with the development of silica gel products, including catalysts, has led to the diversification of the company's business in industrial chemicals.

At the October meeting of the Board of Directors, following the stockholders' meeting, W. N. Watmough, Jr., was elected vice-president in charge of the Mixed Fertilizer Division, the change to be effective immediately, a spokesman for the company said. He succeeds K. D. Morrison who has resigned to take a position with W. R. Grace & Company. Mr. Watmough began his business career with G. Ober & Sons Company, later acquired by Davison.

ture experimental farm at Beltsville, Md.; the Muscle Shoals plant of the Tennessee Valley Authority at Florence, Ala., which produces synthetic ammonia for fertilizer and experimental use; and the Mellon Research Institute in Pittsburgh.

Members of the study group are Maurice Guy Artaud, Gaston Paul A. Campheyn, Jean Georges Combocave, Robert L. M. Damez-Fontaine, Michel Decomble, Remy Henri Dewyst, Francis A. C. Dufour, Andre R. M. Evain, Jean Gorvel, Casimir J. M. Gasiorowski, Pierre G. Gaume, August Goudin, Henri L. J. Loisel, Andre L. Maccaille, Raoul M. Mars, Rene Hardy, Louis P. Ruth and Pierre Tuot.

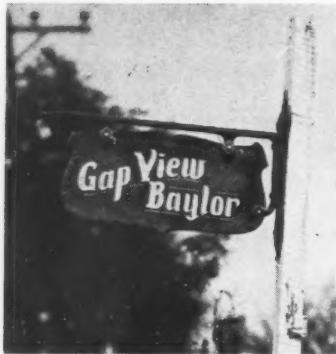
The team will depart for France on December 15th.

## Agronomy Societies Hold Annual Meeting

The 15th annual meeting of the American Society of Agronomy and the Soil Science Society of America, held in Cincinnati, October 30-November 3, was well attended.

On the opening day, the Plant Nutrient Division presented data which showed that chemical fertilizers produced crops equal to or superior to those fertilized solely with organic manures.

The subjects covered at the second day's session included "High Analysis Fertilizers" by Maurice H. Lockwood; "Granulation of Fertilizers" by J. O. Hardesty and K. G. Clark; "Use of Pesticides and Weed Killers in Fertilizers" by A. A. Mehring.



The Sign of Contentment

**D**o you ever dream of retiring . . . and having a farm on which you could darned well do as you please? A place where you could be king of everything your eyes surveyed? There lives such a man, who did that very thing. Harry Baylor lived that dream for years, and before it became too late, he did something about it. He has a whopping big place down in West Virginia. It lies just at the edge of Charles Town, far enough out of town not to be bothered with too many people, yet close enough to keep in touch with his neighbors and what they are doing.

We always have been interested in learning how it feels for one to have been active all of his life, then quickly retire to a quiet, country squire life. It seemed that Harry Baylor would be a good person to give us the answer—so we started off to find him. We located him after tracing his footprints on the sands of his usual morning routine. But, at this point, let's have a flash-back on the man who had that rare ability to know when he had enough of life's rat-race, and the courage to call it "quits" before it was too late.

Harry Baylor (center) takes time to become better acquainted with his neighbors, the Boyers, Sr. and Jr.

# THE MAN

## WHO KNEW WHAT *hew*

*Many of us sit and think and dream — and twirl our thumbs, but that's about as far as we get — Harry Baylor did something about it.*

Harry Baylor, as most of us know, was until recently Vice-President of the International Minerals & Chemical Corporation of Chicago. Harry did not start his career in Chicago—no, not by a long way. He was born in Atlanta, Ga., the son of a civil engineer, and worked his way up to the front office, and lived in Chicago for seven years.

No matter how large the city, one generally finds time to sit down every once in a while, and take personal inventory of things in retrospect. Harry Baylor was one of those fellows who did that very thing. But where the story differs from the average, Baylor did something about his swivel-chair dreams.

Today he is back on the old home place, a farm owned by his maternal grandfather, and which has been in that side of the family for more than a hundred years. His farm is set in a section of West Virginia that is rich in history. Charles Town was the home of the brothers of George Washington, it was the setting of the famous John Brown trial, and the place that established the first rural mail carrier.

To be a gentleman farmer is one thing, and to make the venture pay is still another, but Baylor has accomplished both. We sat on his porch and "shot the breeze" for a while. We were surprised to hear him say that although he had been in the fertilizer business practically



# WANTED

By Sam Lewis Veitch

all his life, he had learned a lot about farming in the last couple of years. He is now seeing farming from the "other side of the fence," and at the same time trying out some of his pet ideas. By playing around with his corn, he has gotten his yield up to 95 bushels, and claims if it had not been for the dry spell they had this summer, he would have gotten 100 bushels. Last year he had his spraying done by plane, but this year he built a machine of his own to do the job. He is trying out a few experiments on Blue Grass.

As the conversation progressed, it was interesting to listen to a man who has been mentally active for years still thinking in high gear. Would he start a herd of White Face or would it be Angus? It will be one or the other, for he said so, and that's the way his mind is working. He still thinks there are opportunities for farmers, and a fuller life to be had by farm families, but for all his enthusiasm for farming there creeps into his conversation a deep affection for the fertilizer industry. To hear him tell of the grand fellows in the business, and how the fertilizer industry has kept its prices lower than most commodities, is to realize where his loyalty still lies.

As we left the farm, he asked us to say "hello" to his friends, but he had a twinkle in his eyes when he said it.

And, that is how we found Harry Baylor, the man who romanced his dreams for years, and had the courage to make them come true.

## Pennsylvania Short Course for Fertilizer Salesmen

Response from last year's short course for fertilizer salesmen at the Pennsylvania State College has prompted an expansion of this type of educational meeting. School of Agriculture officials has announced. As a result, plans are under way for a short course for salesmen of fertilizers and limestone at Penn State, January 29 to 31, 1951.

Dr. A. R. Richer, soils technologist, is arranging the three-day program which will be designed to review fundamentals of soil improvement which might be helpful to salesmen. In addition, the discussions will include fertilizer and lime recommendations for Pennsylvania conditions, stressing the new rotational fertilizer program.

Dr. H. R. Albrecht, head of the agronomy department at Penn State is in charge of arrangements for the special short course, and is handling such matters as accommodations, room reservations and advance registration. Most of the instruction will be handled by faculty members of Dr. Albrecht's department.

Dates for the short course were scheduled to meet the between-semesters-holiday of regular students at Penn State.

## International Minerals Planning New Stock Issue

A special meeting of the stockholders of International Minerals & Chemical Corporation will be held on November 27th in New York to consider a proposed plan of new financing which was recently approved by the board of directors, according to Louis Ware, president of the corporation.

It will be proposed to increase the number of authorized shares of the corporation's common stock from 800,000 to 2 million shares. This would enable the board of directors to carry out a plan of financing which would contemplate the sale, to underwriters for distribution to the public, of 200,470 shares of common stock. This would be followed by the payment

of a common stock dividend on the basis of one share of common stock for each share of common stock then outstanding.

It is intended, Mr. Ware stated, that the net proceeds from the sale of common stock would be added to the cash funds of the corporation and be available as increased working capital and for other general corporate purposes including capital expenditures for new plant facilities and for expansions, additions and improvements to existing plants.

Among the several projects now contemplated by the corporation are further expansion of mining operations, expansion of the large chemical plant now being built in Florida, and other plant expansions for the production of fine chemicals for sale mostly to the pharmaceutical trade.

At the October 26th meeting of the board, which was the first since the corporation's annual stockholders' meeting, all officers of the corporation were re-elected.

## Build Two New Sulphuric Acid Plants

Chemical Construction Corporation, New York City, has begun construction of two new sulphuric acid plants for the National Lead Company.

One of the new plants will be located in St. Louis and the other in Sayreville, N. J., and both will have capacities in excess of 300 tons per day. Output of the new plants will be used to expand National Lead Company's titanium pigment facilities.

## St. Regis Promotes Taylor

St. Regis Paper Company has announced the appointment of James W. Taylor as Assistant Manager of the Southeastern Sales district of the company's Multiwall Bag Division. The appointment became effective November 1.

Mr. Taylor's office is located at Baltimore, where he has been associated with the sales district for more than four years. He joined St. Regis in 1945.

# HIGHER FERTILIZER PRICES EXPECTED

**I**N CONTRAST with the index of prices paid for all goods and services used in production on farms, the price of fertilizer during the spring and fall seasons of 1950 was slightly lower than for the same periods in 1949. Despite somewhat higher prices for fertilizer next year, higher prices for farm products during 1951 are expected to make it profitable for farmers to increase the use of fertilizers at a more rapid rate than they have during the past few years. Even under less favorable relationships between prices of farm products and fertilizers, farmers ordinarily have used less fertilizer than would have been most profitable. Some of the intensively grown fruits and vegetables are adequately fertilized.

The quantity of plant nutrients in fertilizers available for use by farmers during the 1949-1950 crop season was about 3 times the 1935-1939 average. The use of fertilizer has risen steadily since the depression years. No doubt most of the increase in tonnage used is accounted for by use on additional land rather than by increased rates per acre, although the latter has been an important factor. Quantities of nitrogen and phosphoric acid used as fertilizer are now about 3 times the amounts used in 1935-1939. The use of potash as fertilizer has increased slightly more; approximately 3.1 times the 1935-1939 average.

## Plant Capacity Adequate

Plant capacity for production of nitrogen is sufficient to furnish 15 per cent more than was available for use as fertilizer last year and also to take care of presently estimated non-agricultural demands. Approximately one million tons were available for fertilizer use last year.

There is installed capacity within the industry to produce approxi-

*In its bulletin "Farm Cost Situation" issued November 2, the U. S. D. A.'s Bureau of Agricultural Economics makes some interesting predictions concerning farm costs. We quote what they have to say regarding the fertilizer outlook.*

mately 2.8 million tons of available phosphoric acid. A little more than 2 million tons were available for use as fertilizer last year. Probably the only immediate problem in the way of full scale production of superphosphates is the lack of adequate supplies of sulphuric acid.

Present capacity for potash production in this country is about 1.2 million tons. This is only about 100,000 tons greater than was used as fertilizer last year. But it is expected that during 1950-1951 a considerable tonnage of French and Spanish potash will be imported, plus additional tonnage from Western Germany.

## Increased Consumption

The use of commercial plant nutrients has increased at an average rate of about 10 per cent per year for the past several years. With continued favorable farm-product-fertilizer price relationships, a larger increase might be expected for 1951 if supplies were available. Current prospects regarding available supplies would mean a fertilizer consumption of 4.6 million tons of plant nutrients in 1951 compared with 4.2 million tons in 1950, or an increase of 10 per cent. Estimates of desirable applications on cropland and pasture indicate that much more than a 10 per cent increase could be used profitably.

Not only is there room for profitable expansion in use on additional acres, but current rates of application per acre on food and feed grain crops and on hay and pasture are generally well below the rates that would be most profitable. Although the percentage of the acreage of

different crops receiving applications has increased during the past several years, considerably less than one-fourth of the total cropland is fertilized with these materials. Less than 4 per cent of the pasture land in the humid regions receives fertilizer applications currently.

## Further Increases Probable

Estimates of desirable production adjustments and practices, developed in 1944 in cooperation with State agricultural committees, indicated that under conditions of agricultural prosperity it would be profitable to apply fertilizers on 40 per cent of the cropland, and on about 35 per cent of the pasture land in the humid regions. If the rate of application per acre were increased one-third (except for cotton, vegetables, potatoes and tobacco) such applications would require about 30 million tons of fertilizer containing nearly 6 1/3 million tons of plant nutrients. Such a level of use would represent an increase of 50 per cent over total quantities used last year. The use of nitrogen, phosphoric acid and potash would be 1.5, 3.2, and 1.6 million tons, respectively. Last year farmers used 1.0, 2.1, and 1.1 million tons of these three plant nutrients in the order named above or a total of 4.2 million tons.

Recent results of fertilizer use on some crops, notably corn, indicate that rates most generally used are much lower than would be profitable. Recent surveys indicate that farmers who fertilize corn apply about 185 pounds per acre. More fertilizer is used on corn than on any other crop. Nearly one-fourth of all fertilizer is used on this crop. If rates per acre on corn were increased one-third, which would appear conservative enough in view of experimental results, it would increase the use of fertilizer approximately one million tons.

## Pacific Northwest Plant Food Association

Al Fitzpatrick, chemicals division, Pacific Supply Cooperative of Portland, Oregon, was elected president of the newly formed Pacific Northwest Plant Food Association at a recent meeting held in Seattle, Wash. Henning Waltersdorph, Magnolia Fertilizer Company, Seattle, Wash., was elected vice-president; Mr. Alec Runciman, Webfoot Fertilizer Company of Portland, Oregon, treasurer.

The new organization is a successor to the Washington-Oregon Fertilizer Council and will be built along trade association lines in the future. With the above officers, Ted Shipley, plant food division of Swift & Company, Portland, and Mac C. Taylor, Oregon-Washington Fertilizer Company, Seattle, will serve as board of directors. The new organization will include fertilizer manufacturers, primary producers of materials and allied tradesmen.

George Wikestrom, American Potash Institute, Puyallup, Wash., has been named chairman of a Soil Improvement Committee sponsored by the Plant Food Association, which includes six members from industry and six from agricultural colleges in the Pacific Northwest.

## Holmes To Manage New Quaker Oats Chemical Plant

Charles M. Holmes, assistant manager of the Quaker Oats Company, Memphis, Tennessee Chemical plant, has been named manager of Quaker's Chemical plant to be built in Omaha, Neb.

Quaker's Omaha plant is expected to be producing the versatile chemical, furfural, by the end of 1951. Excavation of the building site has been completed, pile driving has started and the company is now seeking bids on the general construction of the plant.

In addition to Holmes, the Quaker Oats Company has transferred Alfred M. Price, assistant manager of the mechanical department of the company's St. Joseph, Mo., mill to Omaha as chief engineer.

Both men will be in Omaha during the construction of the plant. When operations start, the new plant will employ approximately 100 people, the majority of whom will be hired locally.

Mr. Holmes started with Quaker in the company's Cedar Rapids plant in 1925 in the Shipping department. He successively held positions of press operator, mill right helper, grain sampler, cereal and flour research laboratory assistant, furfural experimental laboratory assistant and operating foreman of the Cedar furfural department before being transferred in 1943 to Memphis as chemical

plant superintendent. Shortly afterwards he was promoted to assistant manager, the position he held when transferred to Omaha.

Mr. Price, an engineering graduate of Princeton University, joined the Quaker Oats Company as a trainee in the company's engineering department in the Chicago headquarters in 1946. After a short training period he was transferred to the mechanical department of the St. Joseph, Mo., plant as assistant manager of the mechanical department. He served in the Navy during World War II as a Lieutenant Commander and is still a member of the Naval Reserve.

## NACO APPOINTS NEW EXECUTIVES

Kenneth D. Morrison, formerly vice-president in charge of the Mixed Fertilizer Division of the Davison Chemical Corporation of Baltimore, has been appointed assistant to the Chairman of the Naco Fertilizer Company, a subsidiary of W. R. Grace & Company. The appointment, effective November 1st, was announced by Benjamin H. Oehlert, Jr., vice-president of W. R. Grace & Company, and Board Chairman of the Naco organization.

In his new position, Mr. Morrison will have full responsibility for all operations and activities of the Naco Fertilizer Company and will direct the management of the Naco plants in Jacksonville and Fort Pierce, Fla.; Wilmington, N. C.; Charleston and Spartanburg, S. C.; and Findlay, Ohio; as well as sales offices and agencies in other cities. He will maintain his headquarters in New York.

Mr. Morrison's appointment marks the renewal of an old association, inasmuch as he began his business career with W. R. Grace & Company. In 1927, he was selected as manager of the German-French Potash offices in Baltimore and remained in that position until the organization was disbanded at the beginning of World War II. Mr. Morrison then joined the International Minerals and Chemical Corporation of Chicago as mana-



K. D. Morrison

ger of its New York office. In 1944 he joined the Davison Chemical Corporation, holding that position until his recent resignation.

Mr. Oehlert also has announced that Bachman Smith of Charleston, S. C., and John M. Blass of Wilmington, N. C., both executives of the Naco Fertilizer Company for a number of years, have been named vice-presidents of the company.

Mr. Smith is manager of the Naco plant in Charleston, having been appointed to that post in 1939, when the company started operations there. He began his business

(Continued on page 32)

## Sulphur Production Increasing

The production of sulphur in the United States during September totaled 446,245 tons, compared with 436,612 tons in August and 389,682 tons in September, 1949. The increased demand for sulphuric acid by the fertilizer and other industries has resulted in the shipment of many thousand tons above the production figures. As a result, stocks on hand at the producers' works dropped to 2,835,688 tons, the lowest reserve supply in many years.

## Jones Appointed Link-Belt Advertising Manager

Link-Belt Company, manufacturer of materials handling and power transmission equipment, has appointed Bertram V. Jones Advertising Manager, to succeed Julius S. Holl, deceased. John F. Kelly will continue in the capacity of Assistant Advertising Manager.

Mr. Jones joined the Link-Belt advertising department in Chicago in January, 1923, after having done advertising work for several other companies.

He has since then handled production, creative direct mail and catalog work, and for a period of seven years served as advertising manager for Link-Belt Speeder Corporation, a subsidiary company building shovel-cranes.

He was appointed assistant advertising manager of Link-Belt Company in 1949 and became executive assistant advertising manager on July 1, 1950.

## Sulphur and Calcium as Plant Nutrients

by VINCENT SAUCHELLI (Continued from Oct. 27, 1950 issue)

Albrecht (19) reports on some unpublished work that shows that the calcium of the calcium sulphate of superphosphate has nutrient value. The test involved applying normal 20% superphosphate at 200 pounds per acre on bluegrass as the basis; and then applying diammonium phosphate at equivalent rates. Equivalent nitrogen was added to the superphosphate in the form of urea. The test soil lacked nitrogen, phosphorus, and calcium. Because of its low content of calcium, extra calcium was added to equal that of the calcium sulphate in the superphosphate, and it was applied in both the sulphate and the carbonate forms. The results are summarized in Table 4.

that of the calcium sulphate of the superphosphate, the nitrogen was better utilized, more went into the crop, and the total increase in forage was significant. The same increase occurred in the superphosphate-plus-urea test.

It is possible to deduce from these tests that the calcium of the superphosphate does help the crop to make better use of the nitrogen and phosphorus present. For when nitrogen and phosphorus were offered to the crop in the diammonium phosphate test without the addition of the calcium, they were not utilized to the same degree for building up the crop.

These results help point up the necessity of furnishing adequate supplies of available calcium when

TABLE IV  
DIAMMONIUM PHOSPHATE COMPARED WITH 20% SUPERPHOSPHATE AND UREA  
(NO TREATMENT = 100)

Treatment	Forage Yield	Total in Harvest		
		Nitrogen	Calcium	Phosphorus
None	100	100	100	100
Superphosphate	100	96	86	97
Superphosphate plus extra calcium	103	98	96	97
Superphosphate plus urea	110	114	119	113
Superphosphate plus urea plus calcium	109	114	112	109
Diammonium phosphate	103	112	86	95
Diammonium phosphate plus extra calcium	110	114	109	111

We see that with the extra lime the superphosphate gave the same forage yield that diammonium phosphate gave; apparently, the nitrogen did not contribute to any increase even though more of it entered the crop. When to the diammonium phosphate is added calcium equivalent in amount to

the more concentrated triple phosphates are used on leached, low-calcium soils, especially in humid regions.

## Summary

Gypsum, or dihydrate calcium sulphate, has been used in agriculture since ancient times; but

BONE MEAL

TANKAGE

BLOOD

SHEEP—COW—POULTRY MANURE

CASTOR POMACE

NITROGENOUS  
HOOF MEAL

GROUND TOBACCO STEMS

ALL FERTILIZER MATERIALS

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not until chemistry established the mineral basis of plant feeding was it possible to understand why gypsum was beneficial.

Normal superphosphate contains about half its weight in calcium sulphate which is a source of available calcium and sulphur plant nutrients.

The results of many agricultural experiments both in the United States and abroad have established the essential character of calcium and of sulphur as plant nutrients. Experimental evidence has also been accumulated to show that calcium sulphate, in the anhydrous and hemi-hydrated forms existing in superphosphate, is a good source of calcium and sulphur nutrients.

The leached soils of humid regions are acid and deficient in calcium and to a less extent in sulphur. Liming such soils is perhaps more beneficial because it supplies calcium than for correcting acidity. Most crops can tolerate considerable soil acidity but not a serious calcium deficiency.

Advocates of the use of concentrated phosphates in place of normal superphosphate should consider the available calcium and sulphur of the latter, especially when making recommendations for podzolized soils. ♦

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TABLE I  
CONSUMPTION OF CALCIUM IN VARIOUS FORMS IN AMERICAN AGRICULTURE  
(IN TERMS OF 1,000 TONS CaO)

Year	Fertilizer			Liming Materials
	Mixed	Separate	Total	
1900	332	121	463	417
1910	587	308	895	568
1920	917	153	1,070	1,053
1925	904	203	1,107	1,574
1929	922	360	1,282	1,583
1930	919	345	1,264	1,465
1931	713	256	969	1,096
1932	n.a.	n.a.	646	796
1933	n.a.	n.a.	743	687
1934	n.a.	n.a.	833	972
1935	725	282	1,007	1,354
1936	n.a.	n.a.	1,035	2,537
1937	998	317	1,315	2,612
1938	n.a.	n.a.	1,172	2,752
1939	825	406	1,231	3,091
1940	873	489	1,362	4,934
1941	925	617	1,542	5,844
1942	1,080	703	1,783	6,374
1943	1,208	801	2,009	6,517
1944	1,406	886	2,292	8,811
1945	1,523	1,008	2,531	9,316
1946	1,640	1,100	2,740	12,210

Source: (12)

TABLE II  
SOURCES OF CALCIUM

Material	CaO Content (per cent)
Bone meal, raw	31.40
Calcium nitrate	27.14
Cal-Nitro	11.40
Calcium cyanamide	53.89
Dolomite	30.50
Gypsum	31.17
Hydrated lime	62.52
Limestone	44.35
Phosphate rock	46.29
Potash-lime (5% K <sub>2</sub> O)	45.69
Superphosphate, normal	27.36
Superphosphate, double	19.99
Wet-mixed base	15.83
Wood ashes	32.87

Source: (12)

TABLE IV  
AVERAGE CALCIUM CONTENT OF SOME CROP PLANTS GROWN UNDER COMPARABLE CONDITIONS

Crop	Per cent of Ca in dry matter of plant
Cotton plant	1.70
Cotton seed	0.15
Okra plant	1.75
Tobacco leaf	2.42
Tomato vine	3.48
Tomato fruit	0.29
Potato plant	1.15
Potato tuber	0.13
Wheat straw	0.08
Wheat grain	0.15

Source: H. P. Cooper, S. C. Agr. Expt. Sta. 1949

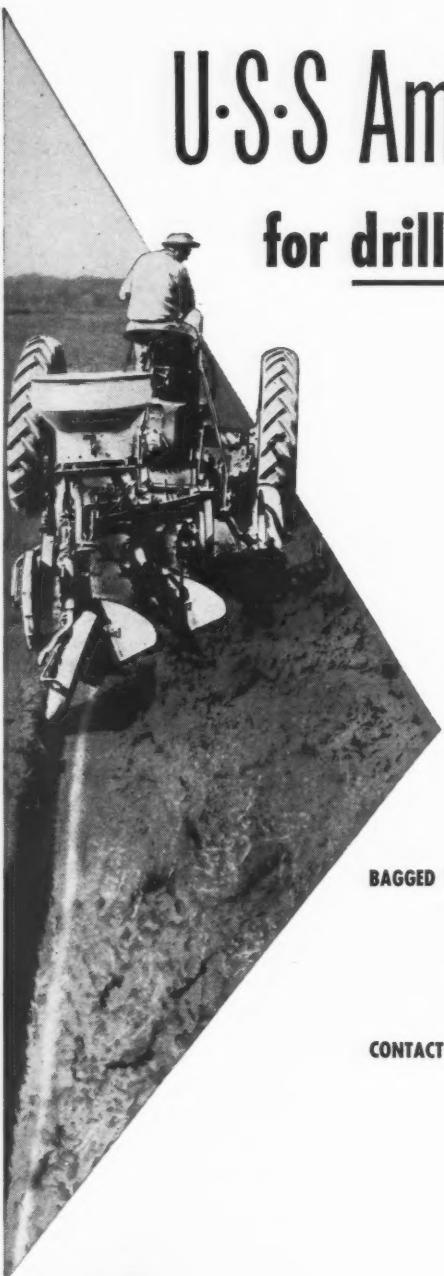
TABLE III  
CALCIUM OXIDE CONTENT OF VARIOUS GRADES OF SUPERPHOSPHATE

Grade	Number of Samples	Average available P <sub>2</sub> O <sub>5</sub> %	CaO Content					Standard error of mean %
			Minimum %	Maximum %	Average %	Standard deviation %		
12-14	5	13.23	17.00	25.82	22.46	...	...	...
16	11	16.52	22.53	29.30	25.80	1.53	.46	
18	17	18.39	25.08	30.73	27.09	1.46	.35	
19	1	19.17	...	...	27.42	...	...	
20	19	20.32	26.79	30.73	28.72	1.22	.28	
40-48	108	46.74	13.22	26.40	19.71	2.34	.22	
ROP Fla.	38	19.63	26.23	32.15	28.70	1.20	.20	
ROP Tenn.	14	19.37	26.20	30.69	27.76	1.30	.35	
ROP West.	2	19.58	28.22	28.80	28.51	...	...	

Source: (12)

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### AMMONIUM SULPHATE

UNITED STATES STEEL

# FERTILIZER MATERIALS MARKET

## NEW YORK

**Possible Export Allocation of Sulphate of Ammonia. Superphosphate Movement Improves with Possible Price Advance. Organics Still in Good Demand with Some Foreign Offerings**

NEW YORK, November 8, 1950

### Sulphate of Ammonia

There were several rumors in the trade that the Government might place this material under an export permit system shortly. Prices are firm, with the leading synthetic producers out of the market and most of the coke oven producers sold out for the balance of this fertilizer season.

### Nitrate of Soda

No price changes were noted and a fair demand existed both with domestic and imported material.

### Ammonium Nitrate

Some buyers have not been able to cover their entire needs of this material and available offerings are difficult to locate. No further price changes were noted.

### Nitrogenous Tankage

Several domestic manufacturers have recently raised their prices slightly for this material and the range is now \$4.15 to \$5.50 per unit of ammonia (\$5.04 to \$6.68 per unit N), according to production point. It is very difficult to locate material for nearby shipment.

### Castor Pomace

Prices continued on the same basis of \$37.50 per ton or \$5.50 per unit of ammonia (\$6.68 per unit N), f.o.b. eastern production points, with sales made recently on this basis. Buyers still favor this material as an excellent conditioner.

### Organics

Organic Fertilizer materials con-

tinued to maintain a firm tone and some tankage and blood moved at around \$8.25 per unit of ammonia (\$10.02 per unit N), f.o.b. Eastern shipping points. No South American material has been imported in some time. Linseed meal advanced about \$3.00 per ton and was quoted at \$57.50 to \$63.00 per ton in bulk, according to shipping point. Soybean meal was quoted at \$58.00 per ton in bulk, f.o.b. Decatur, Ill., which is an advance of about \$6.00 per ton over the last few weeks. Cottonseed meal was very firm with last sales at \$73.00 per ton in bags, f.o.b. Memphis, Tenn.

### Fish Meal

The demand for this material lagged along the East Coast because of the plentiful supply available at low prices at West Coast points where fishing is now in progress. Last quotations for menhaden 60 per cent fish meal were made at \$130.00 per ton, f.o.b. fish factories, but some sales were made at slightly under this figure. Several lots of imported fish meal were offered at various Atlantic ports.

### Bone Meal

This material is firmer in price, due to better feed demand, and fertilizer buyers were also covering their requirements. Imported material is still being offered at various Atlantic and Gulf ports.

### Hoof Meal

Sales were made of this material at \$7.50 (\$9.12 per unit N), f.o.b. western shipping points, with offerings scarce.

### Superphosphate

Several leading producers are now sold out for nearby shipment and are unable to take on additional business. It is still thought the price may advance within the next 60 days, due to increased costs of production. The price of triple superphosphate was advanced by one leading producer 4 cents per unit of phosphoric acid, effective at once.

### Potash

Leading producers recently raised the price of muriate of potash about 2 cents per unit, f.o.b. Western production points. However, their production was said to be sold out for the balance of the season.

## PHILADELPHIA

**Shortages in Sulphuric Acid Felt in Industry. Better Movement of Materials to Mixers Reported.**

PHILADELPHIA, November 8, 1950

Practically all fertilizer materials are in a very strong position and slight shortages are developing. It is expected that some prices will be advanced, and this is definitely so in the case of resale goods. Scarcity of sulphuric acid adds further gloom to the situation.

*Sulphate of Ammonia.*—The synthetic grade is now practically out of the market and it is expected that the price will be higher when the producers are again able to offer supplies. Coke-oven grade is also somewhat tight and export inquiries have now turned in this direction.

*Ammonium Nitrate.*—Production is still heavily under contract and the supply position definitely tight.

*Nitrate of Soda.*—The demand is by no means in excess of the supply, and the situation is more or less normal. No price changes are indicated.

*Blood, Tankage, Bone.*—Blood and tankage are somewhat stronger with the former priced at \$8.25 per unit of ammonia (\$10.02 per unit N), in New York, and \$8.50 (\$10.33 per unit N), Chicago. Tankage is quoted at \$8.25 (\$10.02 per unit N) in this area, but \$8.75 (\$10.63 per unit N) Chicago. A falling off in the importation of these materials is reported. Bone meal remains rather quiet with limited demand. Quotations are nominal at \$60.00 to \$62.50 per ton, depending on grade.

*Castor Pomace.*—No offerings are in the market and production is fully under contract.

*Fish Scrap.*—Market is relatively quiet with the price of menhaden meal nominal at \$130.00 per ton. Importations thus far this year are said to be 25 to 30 per cent ahead of same period in 1949.

*Phosphate Rock.*—Shipments are moving steadily against contracts and acidulators are calling for increased deliveries.

*Superphosphate.*—Supply is fully taken care of by standing contracts and as some acidulators are having difficulty in getting acid, the situation may soon become decidedly uncomfortable.

*Potash.*—Production is said to be entirely sold ahead with demand for more. No additional business is offering, however.

## CHARLESTON

**Acid Shortage Hampers Superphosphate Production. Other Materials in Adequate Supply with Prices Firm.**

CHARLESTON, November 6, 1950

The shortage of superphosphate is of prime concern to fertilizer manufacturers, and this material in many instances is moving from one territory to another to relieve shortages where they exist. Nitrogen and potash continue in firm position.

*Organics.*—The market is relatively quiet with offerings light. The producers of domestic nitrogenous tankage are sold up for the entire season. Prices are nominally \$4.10 to \$4.50 per unit of ammonia (\$4.98 to \$5.47 per unit N), in bulk

f.o.b. production points. Blood and packing-house tankage are at levels of price too high for most fertilizer manufacturers.

*Castor Pomace.*—Limited supplies are offered at \$5.50 per unit of ammonia (\$6.68 per unit N) in bags, f.o.b. Northeastern production points. This material is guaranteed 75 per cent minimum ammonia.

*Dried Ground Blood.*—Chicago market is held at \$9.00 per unit of ammonia (\$10.94 per unit N), but best sales were made at \$8.75 (\$10.63 per unit N). The New York market is approximately the same.

*Potash.*—Supplies are moving steadily against contracts with box car shortages threatening to curtail movement on future shipments. Production continues at a high level.

*Ground Cotton Bur Ash.*—Due to the smaller cotton crop this year, supplies of this potash bearing material are expected to be less than last year, and available supplies are heavily under contract.

*Phosphate Rock.*—Movement to domestic consumers is good, but in certain areas where sulphuric acid supplies have tightened, it has been necessary for some acidulators to curtail shipping instructions on rock. Market remains firm and prices unchanged.

*Superphosphate.*—This market has strengthened considerably to the point of being extremely tight almost nationwide. This is the result of sulphuric acid being far short of demand and the increased cost of sulphuric acid. The price of sulphur has been advanced and some suppliers have cut buyers' quotas for the balance of this year as much as 20 per cent. All these factors affect the market on superphosphate strongly.

*Sulphate of Ammonia.*—Demand is steady and expanding, maintaining stocks at low levels and prices firm.

*Ammonium Nitrate.*—This item is particularly short of demand with no immediate relief in sight.

*Nitrate of Soda.*—Market situation is satisfactory with demand steady. No change in prices has been noted.

## CHICAGO

**Improvement Shown in Organics Market. Transactions Mostly Spot Sales**

CHICAGO, November 6, 1950

A slight improvement in the animal ammoniate market in this area developed during the past two weeks. Although trading is not very extensive, it appears to be broad enough to absorb current production and thus far there has been no inclination on the part of buyers to anticipate their requirements and buy material beyond prompt shipment.

Ground and sacked meat scraps, 50 per cent protein, are listed at \$105.00 to \$110.00 per ton. Digerester tankage, ground and sacked, 60 per cent protein, is listed at \$110.00 to \$115.00 per ton. Dry rendered tankage is fairly firm at \$1.00 to \$1.85 per unit of protein and wet rendered tankage at \$8.50 to \$9.00 per unit of ammonia (\$10.33 to \$10.94 per unit N). Dried blood is generally held at \$9.00 per unit of ammonia (\$10.94 per unit N), but buyers' limits appear to be at \$8.75 (\$10.63 per unit N). Steamed bone meal 65 per cent B.P.L. in bags is quoted at \$75.00 to \$80.00 per ton and raw bone meal, 4½ per cent ammonia, 45 B.P.L., at \$70.00 per ton.

## Baker and Mathieson Receive Formosa Fertilizer Contracts

H. J. Baker & Bro. and the Mathieson Chemical Corporation were the successful bidders for the contract to supply 15,000 tons of nitrogen-phosphate fertilizer for shipment to Formosa. The bids were opened on October 19th by the Federal Supply Office of the General Services Administration.

Baker's share of the total was 3,629 metric tons at a price of \$76.61 per ton, which included loading and trimming and bags for loading and trimming and bags for bagging, and Mathieson was awarded the contract for the remaining 11,371 metric tons at \$74.98 per ton, plus the cost of bagging.

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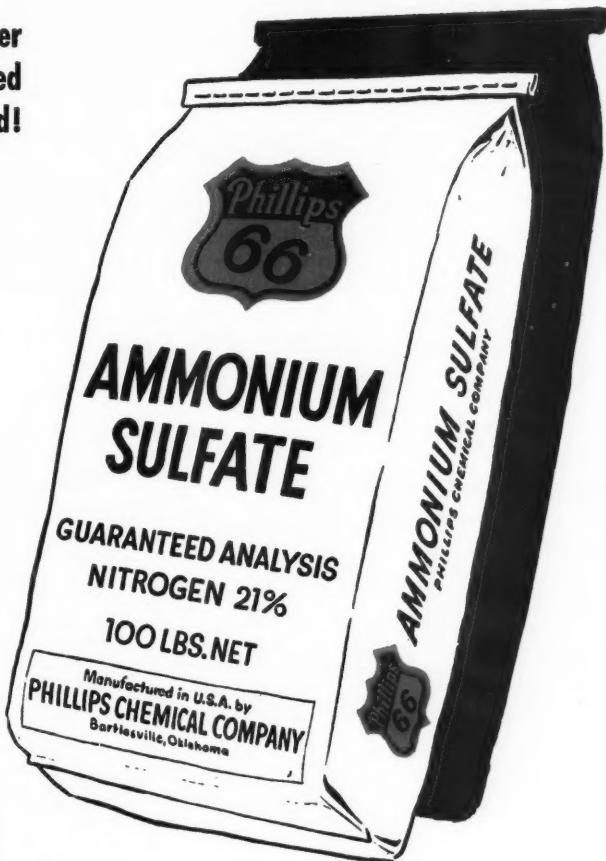
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## Potash Production Increasing

The five major American potash producers delivered 560,672 tons of potash salts containing an equivalent of 323,265 tons K<sub>2</sub>O during the third quarter of 1950, an increase of 12 per cent salts and an increase of 17 per cent in K<sub>2</sub>O over the same period in 1949, according to the American Potash Institute.

Agricultural deliveries in the United States, Canada, Cuba, Puerto Rico, and Hawaii amounted to 524,154 tons of salts, equivalent to 300,907 tons K<sub>2</sub>O, comprised of 461,041 tons of muriate of potash, 3,818 tons of manure salts, and 59,295 tons sulphate of potash and sulphate of potash-magnesia. The chemical industry took 29,458 tons of muriate of potash and sulphate of potash, containing an equivalent of 18,161 tons K<sub>2</sub>O. Other exports amounted to 7,060 tons of salts containing 4,197 tons K<sub>2</sub>O.

During the first nine months of 1950, total deliveries by United States producers and importers

amounted to 1,676,410 tons of potash salts containing 956,521 tons K<sub>2</sub>O, an increase of 1 per cent in salts and 7 per cent in K<sub>2</sub>O over the corresponding period in 1949. Potash for agricultural use in the United States, Cuba, Canada, Puerto Rico, and Hawaii amounted to 885,829 tons K<sub>2</sub>O contained in 1,561,454 tons of salts of which 1,349,766 tons were muriate of potash, 14,929 tons manure salts, and 196,850 tons sulphate of potash and

sulphate of potash-magnesia, representing a decrease of 1 per cent in salts and an increase of 6 per cent in K<sub>2</sub>O. Deliveries to the chemical industry totaled 92,336 tons of muriate of potash and sulphate of potash, containing an equivalent of 57,195 tons K<sub>2</sub>O, an increase of 17 per cent in salts and 18 per cent in K<sub>2</sub>O as compared to 1949. Other exports amounted to 22,529 tons of salts, containing an equivalent of 13,497 tons K<sub>2</sub>O, an increase of 60 per cent in salts and 58 per cent in K<sub>2</sub>O over the same period in 1949.

POTASH DELIVERIES IN NORTH AMERICA  
(SHORT TONS K<sub>2</sub>O)

	Jan.-Sept. 1950	Jan.-Sept. 1949	July-Sept. 1950	July-Sept. 1949
Muriate . . . . .	808,842	742,599	278,350	232,813
Manure Salts . . . . .	3,750	42,353	962	8,926
Sulphate and Sulphate Potash-Magnesia . . . . .	73,237	52,864	21,595	17,057
<i>Total Agricultural</i> . . . . .	885,829	837,816	300,907	258,796
Chemical . . . . .	57,195	48,630	18,161	14,981
Other Exports . . . . .	13,497	8,536	4,197	3,434
<i>Grand Total</i> . . . . .	956,521	894,981	323,256	276,211

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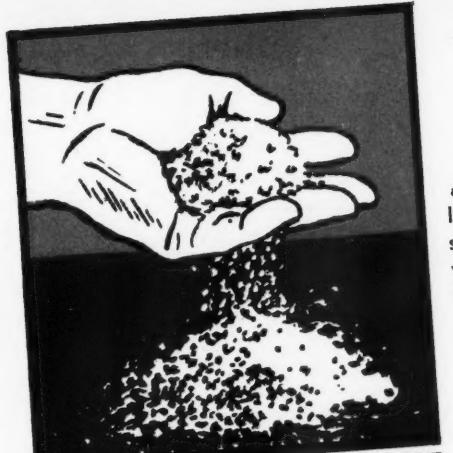
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3-Way  
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Only Davison uses an exclusive finishing process that produces superphosphate in granules. Davison Granulated Superphosphate thus offers you a number of sales points that you can use to make your business grow.

Davison is a primary producer of superphosphates, mining its own phosphate rock, producing its own acid, scientifically controlling every step of the process. Thus you get quick delivery of the highest quality, either bulk or bagged. Price puts you in a favorable competitive position.



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3. Each granule has a hardened but porous surface, which releases plant food at a correct rate. That's food control.



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## Parks Appointed to Pineapple Institute

Dr. E. C. Aucher, Director of the Pineapple Research Institute of Hawaii, announces appointment of Dr. Lawrence Parks of Shelbyville, Tenn., as Associate Soil Scientist at the Institute.

Dr. Parks will arrive in Honolulu about the middle of December and will do research work in the field of soil chemistry under the direction of Dr. M. D. Thorne, head of the Institute's Soils Department.

Dr. Parks received his B.S. degree from Tennessee Polytechnic Institute at Cookeville, May 31, 1947, and his M.S. from the University of Tennessee at Knoxville in August, 1948. For the past two years, he has been at Purdue University, Lafayette, Ind., where he has just completed his final requirements for the Ph.D. degree, his major having been in soil chemistry and his thesis problem dealing with micro-elements in soils.

During World War II, Dr. Parks served as a pilot in the Army Air Corps.

## Re-Use of Cotton Fertilizer Bags

Limited tests indicate that fertilizer bags made of vat-dyed or printed cotton fabrics may have approximately the same re-use value as similar bags now widely used for storing and shipping flour and feed, the U. S. Department of Agriculture reports.

Dr. G. E. Hilbert, chief of the Bureau of Agricultural and Industrial Chemistry, states that small colored and printed bags filled with 30-day-old commercial 5-10-5 fertilizer have withstood deterioration for 30 weeks under laboratory conditions varying from excessively hot and humid to excessively dry, as well as under conditions approximating those that would normally prevail in a warehouse in New Orleans, La.

The tests were made by the Southern Regional Research Laboratory at the request of the Textile Bag Manufacturers Association. A local member of the Association provided the fabrics used—a vat-dyed sheeting and printed sheetings.

Scientists at the Laboratory had 15 bags, approximately 7 by 14 inches in size, made from each fabric and filled them with the 30-day-old fertilizer. They stored five bags from each type of fabric in an oven, placed a similar set in the Laboratory's soil burial cabinet, and stacked five others from each fabric in the basement of the building. At different intervals they emptied and laundered two bags from each group for comparison with the original fabric. Men expert in matching dyes could tell no difference in color. Strength losses, by standard laboratory tests, were insignificant.

Although experiments using full-size bags stored under actual warehouse conditions in different parts of the country would be more conclusive, Dr. Hilbert said these small-scale tests are a promising indication that colored or printed cotton bags can be packed with fertilizer without damage to the color or the fabric.

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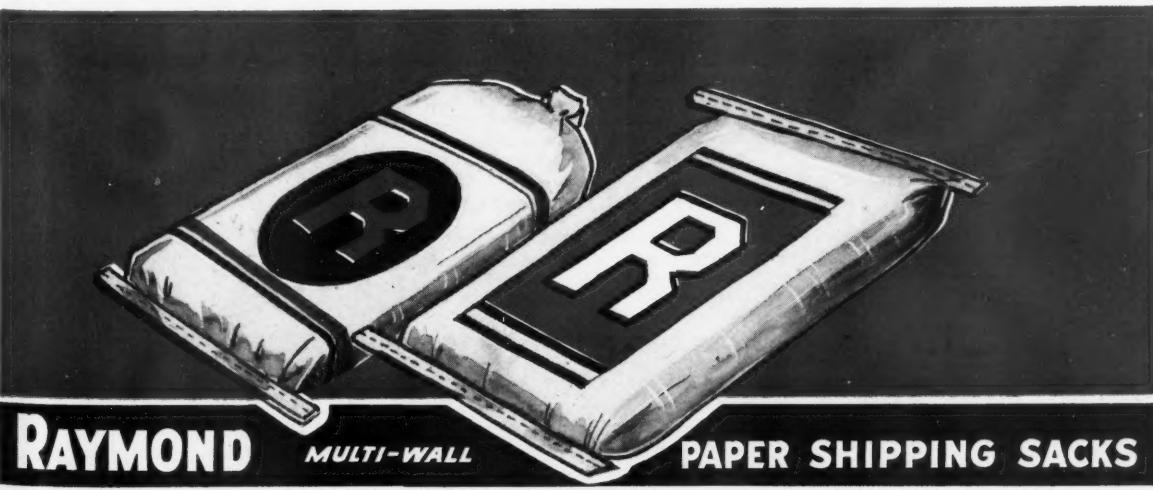


Here's a Thanksgiving toast to all the many friends of Raymond Multi-Wall Paper Shipping Sacks.

North, south, east, or west, wherever you are and whatever you're doing, won't you pause with us and give thanks for being Americans and for having America, the land of prosperity, happy homes, and happy people.

If you are a packer, producer, or shipper of commercial fertilizer, specify Raymond Multi-Wall Paper Shipping Sacks for your packing needs. You'll like the way these tough, strong, dependable Shipping Sacks protect your products. You'll like their all-around quality look . . . their rich, fade-proof printing . . . and you'll like the way the men at Raymond take care of your requirements. Yes, they're made in various sizes and types, printed or plain.

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## Davison Reports Increased Earnings

Net income of The Davison Chemical Corporation for the three months ended September 24th, was \$305,000 as compared with \$296,000 for the same period last year, after provision for income taxes, according to Chester F. Hockley, board chairman and president of The Davison Chemical Corporation.

Davison earnings for three months this year were equal to \$0.59 per share on the 514,134 shares of capital stock outstanding as compared with \$0.57 per share for the same period last year. Net earnings before income taxes were \$486,000 for these three months in 1950, \$466,000 for the same period in 1949.

Sales for the three months amounted to \$7,487,000 as compared with \$6,606,000 for the same period last year.

Mr. Hockley also disclosed that the Board of Directors have approved a stock financing plan designed to raise additional capital for the further expansion of Davison's

production facilities, the first increase in capital stock of the corporation since the company's organization on its present corporate basis in 1935.

"The plan provides for the issuance of some of the authorized but unissued Common Stock in an amount of 128,533 shares on a basis of one additional share for each four shares now outstanding with the stockholders given the opportunity to exercise their preemptive rights," Mr. Hockley said. "The price, terms and time of issue and sale of this stock will be determined at a later date.

"Further capital expenditures for plant improvements and additions will be directed toward greater efficiency in existing operations and toward new developments offering improved profit margins and return on investment."

Mr. Hockley explained that with the new financing in mind, the more detailed report on quarterly earnings to stockholders which had been

contemplated in brochure form would be omitted this quarter, but stockholders could expect it in January.

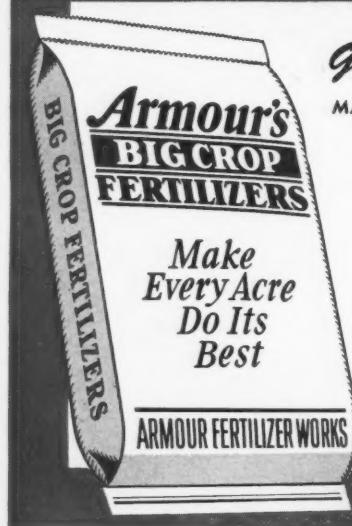
At one point in the stockholders' meeting, Mr. Hockley said:

"Your corporation along with a number of other companies has been and is now engaged in sampling work for the Atomic Energy Commission in the phosphate deposits of Florida.

"It is well known that the AEC has long been interested in learning as much as possible about the low grade sources of uranium in the United States, including the phosphate deposits in Florida and elsewhere.

"The Commission is today actively exploring with The Davison Chemical Corporation and other companies the possibility of producing useful amounts of uranium from phosphate deposits. Your corporation's hopes for eventual success are at least as high as those of any other company participating in this field."

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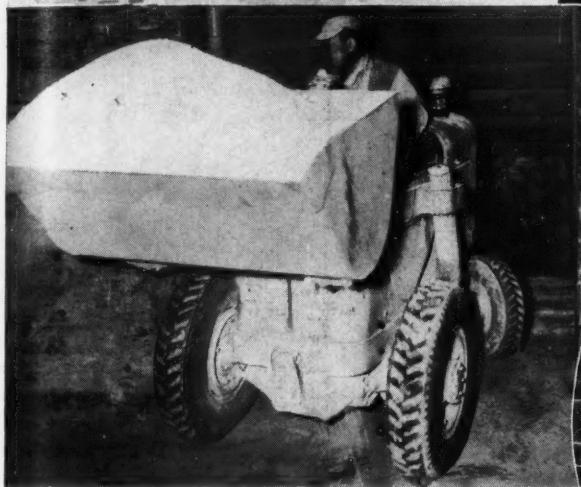
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## No Marketing Quotas for 1951 Corn Crop

Secretary of Agriculture Charles F. Brannan has announced that in order to assist in assuring an abundant production of meat and other livestock products, there will be no marketing quotas in effect for the 1951 crop of corn and that acreage allotments for this important feed grain will be set at levels high enough to provide a substantial increase in production next year. (Acreage allotments for corn are required by the Agricultural Adjustment Act of 1938, as amended.)

Secretary Brannan explained that "this announcement should make it possible for farmers to go ahead with plans for breeding an increased number of sows and for preparing their land for corn in those areas where this is done in the fall."

Commenting on his announcement, Secretary Brannan said, "While our present feed grain situation is excellent, with a total of more than 150 million tons in the supply for all uses in the 1950-1951 year, high level production will be needed again in 1951. All indications are that demand for meat will be even greater next year. We must have the feed to support expected increases in meat production, while at the same time maintaining safe reserves for the future."

"Corn is our most important feed grain. It is the key to the feed grain situation. We have nearly 4 billion bushels of corn in the total supply for the current feeding year, including 1950 production of more than 3 billion 100 million

bushels and a carryover from former crops now estimated at 859 million bushels. In spite of this near-record supply, there are facts in the over-all corn situation which emphasize the need for a big crop next year in order to obtain a big production of meat.

## Monsanto Introduces Concrete Conditioners

Denser, stronger and more uniform concrete blocks and bricks result from the addition to the mix of small amounts of a surface active agent, it is reported by Monsanto Chemical Company.

The chemical, a liquid wetting agent also employed in household and industrial cleaning compounds,

is said to permit the use of less water by increasing its efficiency, thus producing a so-called "dry" concrete of greater strength. At the same time the plasticity required to properly mold blocks and bricks is improved.

In addition, the wetting agent is said to result in cleaner equipment, lighter colored products and better dispersion of cement.

About eight ounces of the chemical are added to a five-bag cement mixture, either before or after the cement. About one-third of the water required is added at the same time and mixed thoroughly. The wetting agent, trade-named Santomerse S, is available from the company in 250-lb. and 540-lb. containers.

## New Sprinkler Fertilizer Attachment

Sprinkler irrigation systems can now be made to do double duty and perform the fertilizing job simultaneously with the addition of a newly developed fertilizer injector, attached to the sprinkler line.



Irrigation Attachment

Consisting of plastic-lined tank and necessary valves, gauges and fittings, this new equipment fits any sprinkler system and completely eliminates the labor required to fertilize in the regular manner. The unit operates entirely by the movement of water in the sprinkler pipe line.

In addition, it is claimed, this fertilizing method is more efficient, since uniform distribution is assured, fertilizer does not scatter or blow away and is made immediately available to the plants by reaching the root level quickly.

When not in use, the injector may be left on the pipe line with no by-passing necessary. Complete information may be obtained from the Dragon Engineering Company, 5549 Merriewood Drive, Oakland 11, Calif.

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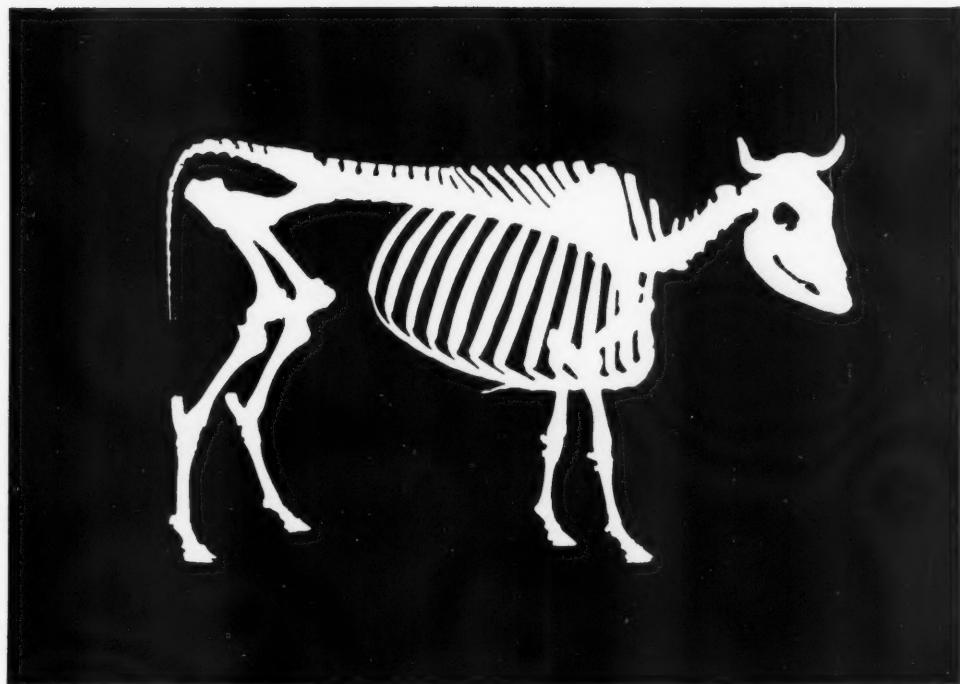
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Ammonia nitrogen, fed to pasture land, puts on the meat, fattens the harvest of T-bones. For dairies it means more well-fed cows per acre, and higher milk production. And better-fed work stock, and hogs. Ammonia nitrogen increases the protein content as well as the yield of grain and grass crops.

High-nitrogen fertilizer applied in the

Fall gives the rapid start necessary to building a year-round pasture program.

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THE new industrial use of radioactive tracer techniques marks a revolutionary advancement in industry and will provide better foods, cosmetics, clothes, automobiles and many other products at lower prices. The authority is Dr. Johan Bjorksten of the Bjorksten Research Laboratories of Chicago, Madison, Wis., and New York in his report to the Foundation for Management Research. Dr. Bjorksten is a consultant to many industrial corporations in the Middle West utilizing radioactive tracer work.

"While the use of radioactive tracers in medical and pharmaceutical research is known," said Dr. Bjorksten's report, "very little has been published on the use of this technique in industrial research—in improving the common articles we eat, use and wear. Many industries do not know that they can use this technique with profit, that it is simple and inexpensive.

"For example, mixing operations are among the most fundamental steps in manufacturing," said Dr. Bjorksten. "Much time and power are wasted in mixing operations, because it has been difficult to determine the precise moment when the mixing is thoroughly completed. By use of radioactive tracers, we can now quickly tell when a big batch of face powder, bakery dough, paint, animal feed, plastic, grain mash, oil, etc., is finished, without over-mixing it to get a margin of safety. By cutting mixing time, the same mixing equipment can handle more materials in a given day, plant capacity is thereby increased, and unit costs decreased."

Dr. Bjorksten's report illustrated how this applied to various industries.

"In the cosmetics industry," he pointed out, "by use of less than one milligram of radioactive potassium salt incorporated in a production batch of say 10,000 gallons, we can know from minute to minute

the movements of this potassium salt in the batch, where it is held up in mixing, minimum time necessary for satisfactory distribution, and other similar factors of importance in production economy. The radioactive potassium can be incorporated in many different chemical forms, so as to mix with almost any type of ingredient. In most industrial applications the radioactivity in the potassium content will have vanished to such a degree after standing over a week-end, that no more precautions need to be taken in handling, and the product can be sold.

"In mixing vitamins with cattle feed, or with any food such as bread, or cereals, it is necessary to keep track of the vitamin content by tests. These tests are often based on expensive and time-consuming animal tests. In many cases it has been possible to simplify the assay by blending the vitamin preparations thoroughly with a radioactive tracer of short half-life, than with the rest of the feed. Since the vitamin is intimately mixed with the tracer in the first place, it is possible to follow the vitamin content throughout the operation by a simple radiation measurement, instead of the laborious vitamin assay, saving greatly on production costs.

"Radioactive phosphorous, radioactive iodine, radioactive chlorine and radioactive sulphur are other tracers which lend themselves to production improvement in fertilizers, solvents, detergents, and mining. For industrial applications, generally products of short half-life are preferred, because then the study can be made fast, and the radioactivity will disappear by itself in a short time.

"These radioactive chemicals, and many others, are made available by the Atomic Energy Commission to recognized companies or consultants, at total costs in many cases, under \$100. The Commission wishes to be satisfied only that the

*(Continued on page 28)*

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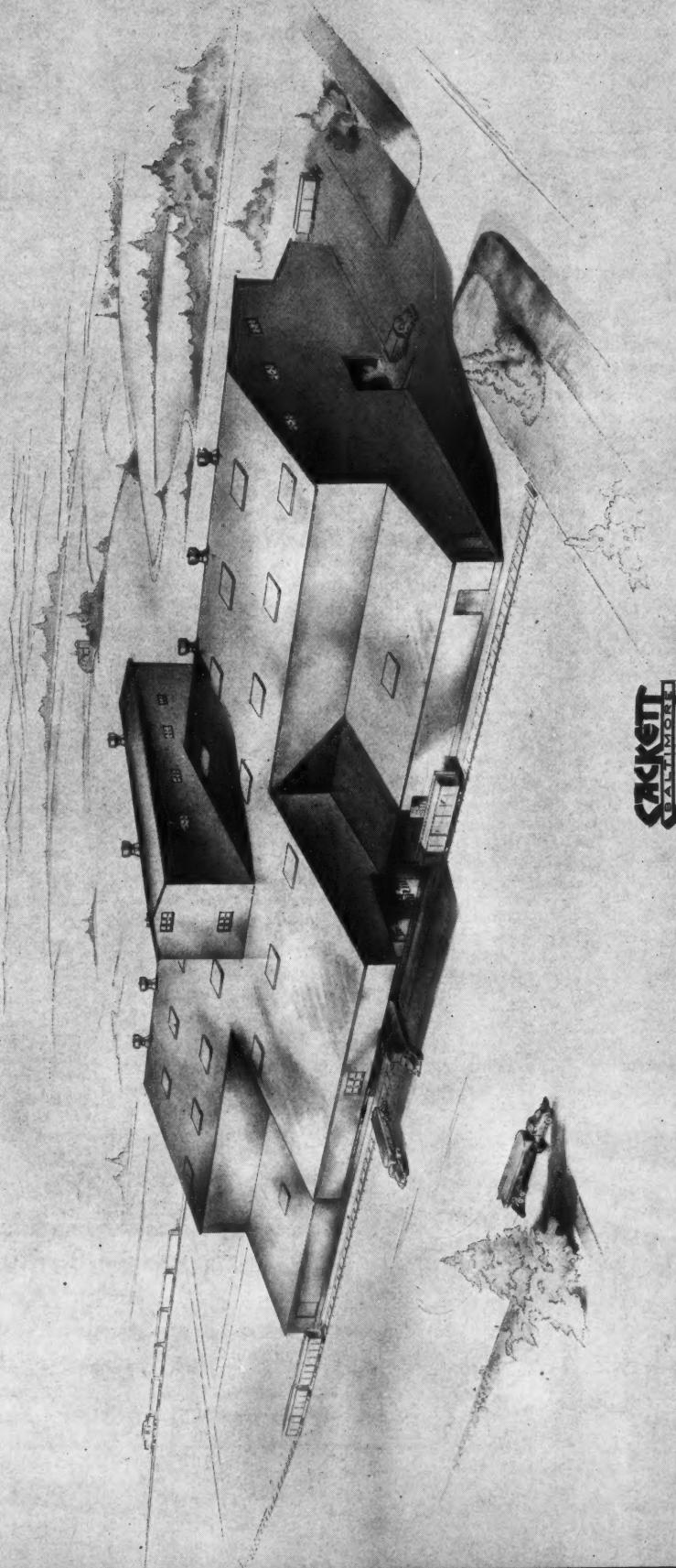
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purpose of the industrial research is useful, and full adequate safety measures are taken. Often it turns out that no particular measures are necessary, and that the radiation is on the level of the dial in a radium painted watch. The use of these materials, however, opens up new vistas in the way of better production at lower costs."

#### Thomas Joins International Minerals Staff

Dr. R. P. Thomas has been appointed manager of the Technical Service Department of the Plant Food Division of International Minerals & Chemical Corporation, Effective November 1st, according to Maurice H. Lockwood, vice-president in charge of the division.

Dr. Thomas, formerly professor of soils at the University of Maryland, has been on a temporary as-



Dr. R. P. Thomas

ignment with International during recent months assisting in market survey studies. In his new capacity he will work with the other departments of the Plant Food Division in the utilization of scientific and research developments in fertilizer manufacture and use. In addition,

he will continue work on the agronomic phase of market surveys and the selling of plant food.

Dr. Thomas was reared on an Indiana farm and received his training at the University of Illinois, Iowa State College, and the University of Wisconsin.

## Pesticide Outlook Favorable for 1951

Some increase is expected in prices of insecticides and fungicides during the 1951 season. This will reflect increased cost of labor, transportation and packaging, and higher costs of raw materials. Prices are expected to be reasonably well stabilized by the beginning of the 1951 season and probably will change little after that for the remainder of the season.

The carryover of insecticides and fungicides on September 30, 1950 was the lowest in the past 3 years. Carryover was about normal in the Northern Plains and western Corn Belt States, but was very low in the southeastern and New England States. Carryover of arsenicals and pyrethrins was low in most areas.

Supplies of raw materials are low, particularly benzene and chlorine used in making DDT, benzene hexachloride, methoxychlor, various forms of 2, 4-D, and certain fumigants. They probably will continue to be in short supply throughout the 1951 season. Special efforts are being made by the industry and associated groups to increase the production of these materials and to make them available for use in agricultural pesticides. But even

so, the quantity that will be available next season probably will be less than the amount used during the 1950 season. Supplies of raw materials used in arsenicals and sulphur and copper compounds used in manufacturing fungicides are about normal.

Insecticides containing rotenone, Rynia and nicotine are expected to be available in adequate amounts. However, those insecticides containing pyrethrins may be scarce. Sufficient fungicides probably will be available to meet essential needs.

In view of the low stocks, particularly of insecticides in the Southeast, and the expected increase in cotton acreage for 1951, supplies of the preferred insecticides may be insufficient to meet the needs in that area. In planning their pest control program, farmers should not depend too heavily upon specific kinds of materials likely to be in short supply. This is especially true of insecticides containing benzene and chlorine. Other effective materials, such as arsenicals, will be available and can be used in place of the newer type insecticides.

(Reprinted from Farm Cost Situation, Bureau of Agricultural Economics, U. S. Department of Agriculture.)

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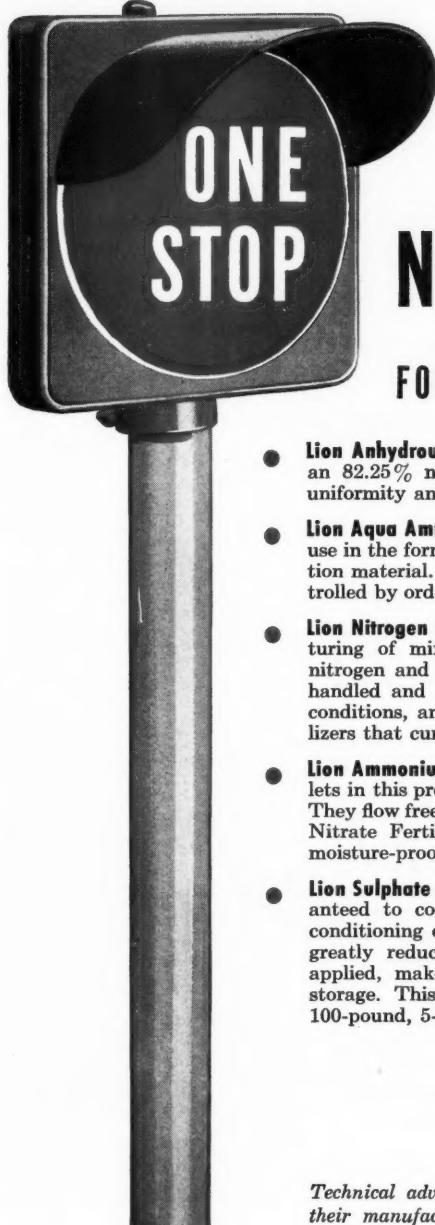
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- **Lion Aqua Ammonia** . . . This product is available to manufacturers for use in the formulation of mixed fertilizers or for sale as direct application material. Normally about 30% ammonia, its content can be controlled by order to suit your needs.
- **Lion Nitrogen Fertilizer Solutions** . . . Made specifically for the manufacturing of mixed fertilizers, these products supply both ammonia nitrogen and nitrate nitrogen in the ratios desired. They are easily handled and available in three types designed for varying weather conditions, and for formula requirements in the production of fertilizers that cure rapidly, store well and drill evenly.
- **Lion Ammonium Nitrate Fertilizer** . . . The improved spherical white pellets in this product contain a guaranteed minimum of 33.5% nitrogen. They flow freely, resist caking and store much better. Lion Ammonium Nitrate Fertilizer is shipped in 100-pound, 6-ply bags with two moisture-proof asphalt layers.
- **Lion Sulphate of Ammonia** . . . This new, superior-type sulphate is guaranteed to contain a minimum of 21% nitrogen. Through special conditioning of the larger crystals, moisture and free acid content is greatly reduced. These factors, together with the special coating applied, make for greater resistance to caking in shipment or in storage. This product flows freely. It is shipped in bulk and in 100-pound, 5-ply bags laminated with asphalt.

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CHEMICAL DIVISION  
El Dorado, Arkansas

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## Southwest Potash Corporation to Open New Potash Mine

PLANS for the opening of a new potash development have just been announced by the Southwest Potash Corporation, a subsidiary of The American Metal Company, Limited, whose offices are at 61 Broadway, New York, N. Y. Arrangements have been made to borrow \$7,500,000.00 on 20-year 3 1/8 per cent notes for delivery on January 2, 1951. The company also has the option to borrow up to an additional \$7,500,000.00 on the same type of notes. However, on the latter loan, the option of borrowing must be exercised within one year thereafter. The loan is being granted by an insurance company.

The loan was obtained for the purpose of providing ample funds for the development of the subsidiary company, Southwest Potash Corporation, and for other uses that may develop.

For the last year or two, The American Metal Company has had one of its representatives contact a great number of concerns and individuals identified with the fertilizer industry, to ascertain the feasibility of developing its potash holdings which are located at Carlsbad, north of the Potash Company of America development.

The company has been drilling in that area for the past couple of years, and it now estimates the cost of bringing the Southwest Potash Corporation into production, based on present price levels, will be around \$10,000,000.00, exclusive of working capital. If materials and

labor are available as needed, the enterprise is expected to begin operations by the end of 1952, with an initial capacity of 185,000 tons of potash (K<sub>2</sub>O) per year.

The plans of the plant will be so designed and arranged, that capacity could be increased, and production stepped up if market conditions warrant.

The parent company has had quite a history, and has been a large operator in its particular field. In 1949 it produced 472,000 ounces of gold; 38,500,000 ounces of silver; 95,000 tons of copper; over 75,000 tons of zinc and more than 76,000 tons of lead.

The Chairman and President of the company is the well-known Harold M. Hochschild.

The company not only has vast operations in this country, but also expands its activities to foreign countries. The companies it operates in the United States are The American Metal Company of Colorado, The American Metal Company, Limited of Illinois, The American Metal Company, Limited of Michigan, The American Metal Company of Texas, The American Zinc and Chemical Company, Blackwell Zinc Company, Inc., and the United States Metals Refining Company.

Among its foreign companies, are The American Metal Company of Canada, Limited; The American Metal Company of Mexico, S. A.; The Anglo Metal Company, Limited, Cia. Metalurgica Penoles,

S. A.; Cia. Metalurgica de Torre S. A.; Cia. Minera la Campaña S. A.; Cia. Minera la Occidental S. A.; Cia Minera de Penoles, S. A. The South American Metal Company.

In 1949 the company's earnings were \$5,574,158.00, after taxes.

## OBITUARY

### Arthur L. Griffin

The fertilizer industry has lost another pioneer member in the death on October 30th of Arthur L. Griffin, Senior Vice-President of F. S. Royster Guano Company, Norfolk, Va. He was 72 years of age.

Mr. Griffin's whole business career was spent with the Royster organization, he having started in as an office boy 55 years ago when the Company was beginning its operations at Norfolk. Advancing steadily, he became vice-president in charge of production, having the responsibility for the output of the 21 Royster plants, many of which were built under his supervision.

In recording his death, the Norfolk press stated: "The facts set forth a career of industrial achievement which only a man of capacity, judgment, and executive talent could have brought about. Mr. Griffin's accomplishments in these respects had an influence far beyond the organization in which he was an important figure. It developed and strengthened the business structure of Norfolk."

A member of the Ghent Methodist Church, Mr. Griffin took an

(Continued on page 32)

## CAL-MAG OXIDES

CUT YOUR COSTS WITH →

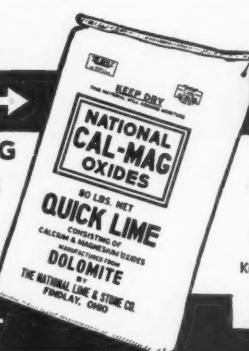
Unexcelled for its superior Dehydrating, Neutralizing, and Curing factors in the preparation of better fertilizers. Write for complete information.

### PROMPT SHIPMENTS

Three railroads serve our Carey, Ohio plant--assuring prompt delivery--everywhere.

The NATIONAL LIME & STONE CO.  
General Offices • • • FINDLAY, OHIO

CAL-MAG  
OXIDES  
MgO 40.39  
CaO 58.07  
TNP 203.88



We Also Produce  
DOLOMATIC HYDRATED LIME (165 TNP)  
and  
KILN DRIED RAW DOLOMITE (107 TNP)  
Screened to size

# SULPHUR

\*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

## \*MAN MADE MOUNTAINS



Sulphur from the field collecting stations is delivered to the vats through insulated pipe lines which discharge directly on the vats. The sulphur is pumped at such a rate that the height of the vat is increased only a few inches per day, the slight vertical rise being the result of a large horizontal area which provides maximum cooling surface and ample tonnage capacity. As the sulphur solidifies it gradually builds up into a great block or vat of solid sulphur, which may be as large as 1200 feet long, 50 feet high, and 200 feet wide, and containing as much as half a million tons of sulphur.

The discharge lines are placed so that the liquid sulphur is spread in an even layer over the entire surface of the vat and is permitted to solidify uniformly. If the liquid sulphur is introduced too rapidly or is not properly distributed, pockets of liquid sulphur will be covered by a crust and remain in the solid sulphur. The low heat-conductivity of sulphur might keep such pockets liquid for a year or more.

Loading operations at one of the huge vats of Sulphur at our Newgulf, Texas mine. Such mountains of Sulphur are constantly being built at our mines, from which shipments are continually made.



**TEXAS GULF SULPHUR CO.**  
75 East 45th St. New York 17, N. Y. INC.  
Mines: Newgulf and Moss Bluff, Texas

active part in the Community Chest, the Y. M. C. A. and other civic affairs. During the war, he gave much time to labor-management adjudication under the War Production Board.

#### Julius S. Holl

Julius S. Holl, advertising manager of Link-Belt Company for almost 40 years, died at the Presbyterian Hospital, Chicago, Tuesday evening, October 24, after a prolonged illness.

Mr. Holl was born in Philadelphia in 1886 and entered the employ of Link-Belt Company at a subsidiary company, The J. M. Dodge Company, Philadelphia, in 1905, as stenographer and clerk.

He later joined the Link-Belt advertising department and in 1911 was made advertising manager at Philadelphia, later moving the department to Chicago.

He was active in the development of the Engineering Advertisers Association of Chicago, founded in 1919, and was elected president in 1920. He helped also in the organization of the National Industrial Advertisers Association.

#### NACO Executives

(Continued from page 11)

career in the Charleston office of the American Agricultural Chemical Company, and in 1916 became associated with the Maybank Fertilizer Company, also of Charleston. He was manager of the Maybank plant at the time he resigned to join Naco.

Mr. Blass is manager of the Naco plant in Wilmington, having held the position since July 4, 1947.

He entered the employment of W. R. Grace & Company in 1914 and for some years was connected with Grace interests in Haiti. He joined the Wilmington office of the Nitrate Agencies Company, predecessor of the Naco organization, in 1923 as assistant to A. C. Diehl, manager, and when the Naco Fertilizer Company was formed in 1939 continued in the same position. He succeeded to the management of the Wilmington plant upon Mr. Diehl's death.

#### Good Pasture

Because he refused to give up, but kept trying in spite of failure N. L. Simmons of Route 1, Pollocksville, North Carolina, now has one of the best pastures to be found in the state.

Simmons, a Negro farmer of Jones County, realized the need for a good pasture on his farm and tried several times to establish one. Each time, however, his efforts ended in complete failure.

Last fall Simmons decided to try a combination of Ladino clover and tall fescue. He first took soil samples on his farm and sent them to the State Soil Testing Laboratory in Raleigh for analysis. When the results of the tests came back, he followed the recommendations to the letter.

On three acres of land he applied four tons of lime and 500 pounds of 2-12-12 fertilizer. On two additional acres he used two tons of lime and 500 pounds of 2-12-12.

According to Albert W. Spruill, Jones County Negro farm agent for the State College Extension

Service, Simmons' pasture today is one of the best in the state. Extension officials who have seen it expressed a similar opinion.

To Simmons the pasture is "not only a victory, but inspiration to bigger and better things in farming," Spruill asserted.

#### Eastern Carolina Pastures

Observation of pastures in Currituck, Pasquotank, and Perquimans Counties has convinced Dr. E. R. Collins, in charge of agronomy for the State College Extension Service, that Eastern North Carolina can produce pastures equal to any grown in the State.

Dr. Collins attended some April and May pasture tours in these counties, where he observed many acres of Ladino clover-fescue and other grazing mixtures. Most encouraging part of the picture, he says, is that these pastures are being grown on land unsuited for the crops generally produced in that area.

Philip Roberts of Currituck County seeded 7½ acres which had been in broom-sedge, fennel, and sourgrass. He used 2½ tons of lime on this low-lying, poorly drained soil and fertilized with 800 pounds of 2-12-12 and 600 pounds of 0-14-14 per acre. The Ladino-fescue mixture is making excellent growth on land which normally was not returning any income to the farmer.

Another example is found on the farm of E. V. Ballance and Son, where weeds higher than a farm tractor were turned under. Charlie Roberts also has 7½ acres of rough

## THE DAVIDSON COMMISSION CO. BROKERS

TALLOWS—GREASES—STEARINES

FERTILIZER AND ANIMAL FEED MATERIALS

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## FEDERAL CHEMICAL COMPANY USES

# SPENSOL®

### SPENCER NITROGEN SOLUTIONS

The Federal Chemical Company's six big plants serve agriculture in Ohio, Indiana, Illinois, Kentucky, Tennessee, Alabama and Mississippi. The Louisville plant, pictured here, manufactures Federal Bonner Fertilizers for farmers in the Blue Grass State.



Now, more than ever before, mixers use Spensol (Spencer Nitrogen Solutions) to produce low-cost, high-quality fertilizers. Naturally, we of Spencer Chemical Company appreciate the industry's display of confidence in our agricultural nitrogen.

But what pleases us even more is the ever-increasing number of calls received by members of our Technical Services Department. These men help up-grade customers' products and suggest ways of improving their mixing methods.

This staff of fertilizer experts is at your service, too. If you would like to know how they can assist you, write Spencer today. And remember to ask for the Spencer book, "Spensol Properties and Uses."

### SPENCER CHEMICAL COMPANY

Executive and Sales Offices:  
Dwight Bldg., Kansas City 6, Mo.

Works: Pittsburg, Kans. • Parsons, Kans. •  
Chicago, Ill. • Henderson, Ky. • Charlestown, Ind.



land doing nicely in Ladino and fescue.

T. C. Whitehurst, Route 3, Elizabeth City, was amazed at the way his Ladino-fescue came out after he had decided the stand was so poor it should be plowed up. He agreed to take the advice of County Agent S. L. Lowery and wait to see what happened. Now he is glad he did, for he has a nice stand and it is growing rapidly.

Dr. Collins says in some areas less vigorous pastures are seen where farmers decided to take short cuts and leave out some of the essential steps such as liming, inoculating the seed, preparing the seedbed properly, and fertilizing.

#### WANTED—CHEMICAL ENGINEER

Independent Fertilizer Plant on South Atlantic Coast requires man familiar with Sulphuric Acid manufacture of Box Chamber Plant with Ammonia Oxidation Unit. Applicant must be in good health but free from call by the Armed Forces. Address "320" care AMERICAN FERTILIZER & ALLIED CHEMICALS, Philadelphia 7, Pennsylvania.

Sulphuric Acid Plants  
Fertilizer Plants, Super & Triple Phosphate  
Phosphoric Acid Plants  
Ammonium Sulphate Plants  
Ammonium Nitrate Plants  
Ammonia Oxidation Units for Chamber Plants



## Sulphuric Acid and Fertilizer Plants

We engineer, build and modernize sulphuric acid and fertilizer plants of all types and sizes. Before you build, expand or modernize your equipment, in any of the fields listed here—write for complete details concerning our services and recommendations. We supply the right answers quickly! No obligations...

532

**NICOLAY TITLESTAD**  
CORPORATION  
11 WEST 42nd STREET • NEW YORK 18, N.Y.

#### Barrett Anniversary

(Continued from page 6)

#### Nitrogen Information and Service

In addition to distributing nitrogen for producing companies at moderate cost, Barrett functions as a technical service bureau wholly educational and advisory in character. The skill, experience and "know-how" of Barrett technical men have been of invaluable aid to the fertilizer and chemical industries in increasing nitrogen's contributions to agriculture and industry.

In the chemical field, Barrett research has helped to develop many new uses for nitrogen. Barrett renders valuable service to manufacturers of mixed fertilizers. Barrett technical men are in constant contact with fertilizer factory superintendents, assisting them in formulation problems. This service is rendered to both large and small manufacturers. Barrett conducts research in the mixed fertilizer field which is made available to all members of the industry.

In the agricultural field, Barrett cooperates with government officials in promoting the scientific use of nitrogen products to improve the crop-producing power of the soil. Barrett's activities supplement the work of the U. S. Department of Agriculture, State Experiment Stations, Extension Services, County Agents, Vocational Teachers and farm organizations.

For a generation, Barrett has been conducting on-the-farm tests and demonstrations to assist in determining the most efficient use of nitrogen on various crops and soils. From time to time, Barrett has established fellowships at agricultural colleges for similar purposes.

Results and information obtained from these sources and activities are communicated to thousands of farmers annually without charge. Barrett does this through many different media—advertisements, booklets, pamphlets, posters, sound and color motion pictures.

Barrett's story is the story of the development of American-made nitrogen.

## THE BRADLEY HERCULES MILLS AND GRIFFIN MILLS

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PHOSPHATE ROCKS and LIMESTONE

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Catalogs Mailed on Request

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AMERICAN FERTILIZER & ALLIED CHEMICALS

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## LINK-BELT Malleable Iron and Promal Cast Elevator Buckets

Accurate, uniform dimensions  
consistently maintained.

Smooth, seamless surfaces mini-  
mize friction and wear.

Reinforced corners for greater  
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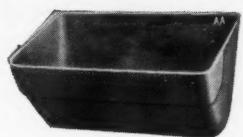
Metal very resistant to corro-  
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Buckets are furnished in many  
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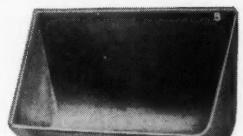
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Style AA



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46 to 48% Available Phosphoric Acid



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NOVEMBER 11, 1950

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Free Flowing



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and provides bulk. It is sterilized—freed from  
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Here is an inexpensive organic conditioner that is  
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The Quaker Oats Company

CHEMICALS DEPARTMENT  
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Chicago 54, Illinois

## FARM PORTRAIT NO. 11



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Any farm boy is, indeed, fortunate if he turns his attention early to those fundamental things upon which a successful farm life rests.

It may be some years before *this* particular young gentleman realizes it, but among such fundamentals must be included a realization of the importance of the wise use of suitable fertilizers. Many of these are compounded with potash—often with Sunshine State Potash, a product of New Mexico, and an outstanding soil nutrient that protects crops against plant diseases and droughts, and provides greater soil fertility.



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**HIGRADE MURIATE OF POTASH**  
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International Minerals & Chemical Corporation, Chicago, Ill.  
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Davison Chemical Corporation, Baltimore, Md.  
International Minerals & Chemical Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Virginia-Carolina Chemical Corp., Richmond, Va.

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Southern Lead Burning Co., Atlanta, Ga.  
Stedman Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Company, Boston, Mass.  
Titeled Corporation, Nicolay, New York City

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Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City  
International Minerals & Chemical Corporation, Chicago, Ill.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.

#### POTASH SALTS—Manufacturers

American Potash and Chemical Corp., New York City  
Potash Co. of America, New York City  
International Minerals & Chemical Corporation, Chicago, Ill.  
United States Potash Co., New York City

#### PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

#### REPAIR PARTS AND CASTINGS

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Mach. Works, Aurora, Ind.

#### SCALES—Including Automatic Bagging

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Company, Boston, Mass.

## BUYERS' GUIDE

### SCREENS

Atlanta Utility Works, The, East Point, Ga.  
 Link-Belt Company, Chicago, Ill.  
 Sackett & Sons Co., The A. J., Baltimore, Md.  
 Stedman Foundry and Mach. Works, Aurora, Ind.  
 Sturtevant Mill Company, Boston, Mass.  
 Universal Vibrating Screen Co., Racine, Wis.

### SEPARATORS—Air

Sackett & Sons Co., The A. J., Baltimore, Md.  
 Sturtevant Mill Co., Boston, Mass.

### SPRAYS—Acid Chambers

Monarch Mfg. Works, Inc., Philadelphia, Pa.

### SULPHATE OF AMMONIA

American Agricultural Chemical Co., New York City  
 Armour Fertilizer Works, Atlanta, Ga.  
 Ashcraft-Wilkinson Co., Atlanta, Ga.  
 Baker & Bro., H. J., New York City  
 Barrett Div., Allied Chemical & Dye Corp., New York City  
 Jackie, Frank R., New York City  
 Koppers Co., Inc., Tar Products Div., Pittsburgh, Pa.  
 Lion Oil Co., El Dorado, Ark.  
 McIver & Son, Alex. M., Charleston, S. C.  
 Northern Chemical Industries, Inc., Searsport, Me.  
 Phillips Chemical Co., Bartlesville, Okla.  
 United States Steel Corp., New York City  
 Woodward & Dickerson, Inc., Philadelphia, Pa.  
 Woodward Iron Company, Woodward, Ala.

### SULPHUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
 Texas Gulf Sulphur Co., New York City

### SULPHURIC ACID

American Agricultural Chemical Co., New York City  
 Armour Fertilizer Works, Atlanta, Ga.  
 Ashcraft-Wilkinson Co., Atlanta, Ga.  
 Baker & Bro., H. J., New York City  
 International Minerals & Chemical Corporation, Chicago, Ill.  
 McIver & Son, Alex. M., Charleston, S. C.  
 Northern Chemical Industries, Inc., Searsport, Md.  
 Southern States Phosphate Fertilizer Co., Savannah, Ga.  
 Summers Fertilizer Co., Baltimore, Md.  
 U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
 Virginia-Carolina Chemical Corp., Richmond, Va.

### SUPERPHOSPHATE

American Agricultural Chemical Co., New York City  
 Armour Fertilizer Works, Atlanta, Ga.  
 Ashcraft-Wilkinson Co., Atlanta, Ga.  
 Baker & Bro., H. J., New York City  
 Davison Chemical Corporation, Baltimore, Md.  
 International Minerals & Chemical Corporation, Chicago, Ill.  
 Jackie, Frank R., New York City  
 McIver & Son, Alex. M., Charleston, S. C.  
 Northern Chemical Industries, Inc., Searsport, Me.  
 Southern States Phosphate Fertilizer Co., Savannah, Ga.  
 Summers Fertilizer Co., Baltimore, Md.  
 U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
 Virginia-Carolina Chemical Corp., Richmond, Va.

### SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
 International Minerals & Chemical Corporation, Chicago, Ill.  
 U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
 Virginia-Carolina Chemical Corp., Richmond, Va.

### TANKAGE

American Agricultural Chemical Co., New York City  
 Armour Fertilizer Works, Atlanta, Ga.  
 Ashcraft-Wilkinson Co., Atlanta, Ga.  
 Baker & Bro., H. J., New York City  
 Davidson Commission Co., The, Chicago, Ill.  
 International Minerals & Chemical Corporation, Chicago, Ill.  
 Jackie, Frank R., New York City  
 McIver & Son, Alex. M., Charleston, S. C.  
 Woodward & Dickerson, Inc., Philadelphia, Pa.

### VALVES

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